Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	ET Docket No. 98-237
with Regard to the 3650-3700 MHz	)	
Government Transfer Band	)	

To: The Commission

PETITION FOR RECONSIDERATION AND COMMENTS

EXTENDED C-BAND AD HOC COALITION

Christine E. Enemark
Jonathan D. Blake
Covington & Burling
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2401
(202) 662-6110

Its Attorneys

December 18, 2000

TABLE OF CONTENTS

SUMMARY

The Extended C-Band Ad Hoc Coalition (the "Coalition") seeks Commission reconsideration of its decision in the *First Report and Order* to relegate FSS operations in the extended C-band to secondary status.

The Coalition believes that the Commission is sacrificing a critical, viable and robust telecommunications service in a misguided attempt to promote speculative terrestrial Fixed Service operations in this band. Specifically, the Commission has ignored the evidence in the record of this proceeding which suggests that Fixed Service operations are not likely to succeed in this spectrum band. The Commission has also ignored the increased importance of FSS operations in the extended C-band because of the dramatic increase in demand for international voice, video, data and Internet services coupled with an overcrowded standard C-band which is insufficient to support the dramatic growth in satellite services. Similarly, the Commission has ignored the continued need to support telemetry, tracking and control functions for satellite systems operating in the Ka-band and V-band. The decision to reallocate the spectrum to terrestrial services is inconsistent with previous Commission decisions to retain FSS operations in the extended C-band. Furthermore, the Commission's decision to establish a drop-dead date for the filing of co-primary applications and to disregard the potential for sharing between FSS and Fixed Service is arbitrary and unsupported by the record. For these reasons, the Coalition respectfully requests that the Commission reconsider its decision to reallocate the extended C-band from FSS and TT&C use to Fixed Services use and allow the continued co-primary operations of satellite services in this band.

In addition to seeking reconsideration of the *First Report and Order* in this proceeding, the Coalition respectfully files comments with respect to certain issues raised in the

Second Notice of Proposed Rulemaking. The Coalition supports the proposed deletion of footnote US 245, agrees with the Commission's preliminary conclusion that there is no need to restrict the size of VSAT antennas, and urges the Commission to permit the use of the extended C-band to provide TT&C functions for Ka-band and V-band satellite systems.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	ET Docket No. 98-237
with Regard to the 3650-3700 MHz	)	
Government Transfer Band	)	

PETITION FOR RECONSIDERATION AND COMMENTS

The Extended C-Band Ad Hoc Coalition (the "Coalition")[1] hereby submits this petition for reconsideration of the *First Report and Order* and comments regarding the *Second Notice of Proposed Rulemaking* in the above-captioned proceeding.[2]

BACKGROUND AND INTRODUCTION

On December 18, 1998, the Commission released a *Notice of Proposed Rule Making*, proposing to allocate the 3650-3700 MHz band on a primary basis to the terrestrial Fixed Service, while also proposing to grandfather existing Fixed Satellite Service ("FSS") earth stations in the band.[3] The Commission indicated in the *NPRM* that it would no longer accept applications in the 3650-3700 MHz band for new FSS earth stations, major amendments to pending earth station applications, or applications for major changes to existing earth station

---

[1] The Coalition is comprised of a wide variety of FSS operators and customers, including: AT&T Corporation, Concert Communications Company, GE American Communications, Inc., Hughes Network Systems, Lockheed Martin Global Telecommunications, Loral Space & Communications Ltd., New Skies Satellites N.V., PanAmSat Corporation, the Satellite Broadcasting and Communications Association, the Satellite Industry Association, TRW Inc. and Wold International, Inc.

[2] *See* Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band, ET Docket No. 98-237 (rel. Oct. 24, 2000) ("*First Report and Order*").

[3] *See Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band*, 14 FCC Rcd 1295 (1999) ("*NPRM*").

licenses.[4] The Commission took this action (1) notwithstanding the robust use of this spectrum band by international satellite operators to provide a variety of voice, video, data and Internet services currently in operation and (2) despite the fact that the Commission had pending before it a petition for rulemaking, filed by nine satellite operators more than a year earlier, seeking an allocation of ten megahertz in the band to be used to conduct tracking, telemetry and control ("TT&C") for satellite systems employing other frequency bands for their primary service links.[5]

More than one year later, the Commission modified its restrictions on FSS earth station applications in the band, recognizing that its "freeze" on the acceptance of new FSS applications in the extended C-band was constraining satellite operators attempting to provide service.[6] The Commission determined that it would continue to accept applications for new extended C-band earth stations within ten miles of a grandfathered earth station. This limited relief, the Commission concluded, would provide "reasonable opportunities to obtain real estate for the placement of new extended C-band earth stations" while having only a "*de minimis* impact on the opportunities for the provision of fixed services in the 3650-3700 MHz band."[7]

In comments filed on the *NPRM*, FSS operators opposed the adoption of a primary allocation for a terrestrial Fixed Service in the extended C-band to the extent that such an allocation would preclude additional FSS operations in the band.[8] Specifically, existing earth

---

[4] *See NPRM,* 14 FCC Rcd at 1295.

[5] *See Petition for Rulemaking*, RM-9411 (filed Aug. 7, 1997).

[6] *Amendment of the Commission's Rules with Regard to the 3650-3700 MHz Government Transfer Band*, 15 FCC Rcd 9340-41 (2000) ("*MO&O*").

[7] *Id.*

[8] *See, e.g.,* Comments of Comsat Corporation ("Comsat"); Comments of GE American Communications, Inc.; Comments of PanAmSat Corporation; Comments of Satellite Industry (continued...)

station operators and their customers emphasized the explosive growth in demand for satellite capacity and the overcrowding of the standard C-band as evidence of the continued need for existing and future FSS operations in the extended C-band.[9] As several other FSS parties noted, the extended C-band holds the most promise for TT&C operations for systems with primary service links in other frequency bands (*e.g.*, Ka-band and V-band).

Nonetheless, in the *First Report and Order,* the Commission reallocated the 3650-3700 MHz band to terrestrial Fixed Service on a primary basis. The Commission reaffirmed that earth station applications for 3650-3700 MHz that had already been filed and licenses that had already been issued would be grandfathered on a primary basis, as would applications filed on or before November 30, 2000. The Commission concluded, however, that earth station applications filed after November 30, 2000, would have secondary status with respect to future terrestrial Fixed Service operations, and that the ten mile exception from the *NPRM* conferring primary status on applications filed before this date would not apply to these post-November 30 applications.[10] The November 30 deadline is two and one-half months before the rules the

---

Association ("SIA"). All references to comments filed in this motion are to the initial round of comments in ET Docket. No. 98-237 filed on or about February 16, 1999.

[9] *See, e.g.*, *Columbia Communications Corporation Application for Special Temporary Authority on the NASA TDRS-6 Satellite*, File No. 120-SAT-STA-96, *Order*, 11 FCC Rcd 8639, 8640 (1996) (noting present shortage of domestic and transatlantic standard C-band capacity); *Amendment to the Commission's Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems and DBSC Petition for Declaratory Rulemaking Regarding the Use of Transponders to Provide International DBS Service*, IB Docket No. 95-41, *Report and Order*, 11 FCC Rcd 2429, 2430 (1996) (additional C-band capacity is "much-needed" in the domestic market); *see also* GE American Communications, Inc. Comments at 5 ("[T]he conventional C-band is severely congested at key orbital positions over North and South America."); PanAmSat Corporation Comments at 1 (extended C-band is a valuable resource in light of shortage of standard C-band).

[10] Moreover, to retain grandfathered status, any station authorized would need to be completely constructed and operational within one year of the initial authorization, and not have made modifications other than those classified by the Commission as minor in nature.

Commission adopted in the *First Report and Order* even become effective, and the time until the auctions for this spectrum can be initiated is even farther in the future.[11] Moreover, there are substantial grounds for modification of the Commission's decision on reconsideration, and yet the rights of FSS earth station operators to seek co-primary operating status will have been extinguished before the Commission would even begin to undertake a review of its action. The Coalition already has requested that the Commission stay the November 30 deadline,[12] and hereby seeks reconsideration of the *First Report and Order*.

DISCUSSION

I. THE COMMISSION'S DECISION TO REALLOCATE THE 3650-3700 MHZ BAND WAS CONTRARY TO COMMISSION PRECEDENT, THE RECORD IN THIS PROCEEDING AND THE PUBLIC INTEREST.

Existing licensees in the extended-C band are currently providing video, data and critical Internet backbone services.[13] Satellite operators have invested in the construction, launch and operation of satellites with transponders dedicated to this frequency band. Customers have developed business models in anticipation of obtaining satellite capacity in this band as they cannot either obtain or afford alternative spectrum in the standard C-band. Despite this investment and reliance on continuing access to this spectrum by FSS providers and customers, the Commission's *First Report and Order* furthers the interests of the Fixed Service, a service for which little or no equipment exists to provide service in this spectrum band and that, at best,

---

[11] *See First Report and Order* ¶¶ 29, 145. Federal Register publication has now occurred, and the effective date of the rules has now been established as February 15, 2001 – two and one-half months after the deadline for FSS earth station filings. *See* 65 Fed. Reg. 69451 (Nov. 17, 2000).

[12] *See* Emergency Motion for Stay Pending Reconsideration, filed November 28, 2000.

[13] For example, the New Skies satellite network is comprised of six in-orbit C-band and Ku-band satellites; New Skies also has plans for long-term expansion and has existing rights and pending applications for orbital slots in the Ka-band to accommodate future operations.

will require years for terrestrial licensees to develop, construct and deploy an operational service. Damaging existing licensees' current and future operations and generally threatening the operations of international satellite systems by limiting the ability of FSS providers to license new earth stations and to modify base stations on a co-primary basis in order to promote a nonexistent service does not serve the public interest. Similarly, jeopardizing the ability of new advanced satellite systems to operate critical TT&C functions in this band and thus handicapping the development and reliability of these critical systems to promote an undefined potential terrestrial service also does not promote the public interest.

The Commission's action in this proceeding may result in the sacrifice of a viable, operational and critical international communications service based on pure Commission speculation that an undeveloped and untried local loop service would better serve the public interest. It is particularly ironic that the Commission is purporting to promote the interests of rural and underserved customers; in fact, the Commission's decision in the *First Report and Order* will jeopardize the ability of satellite operators to continue to provide advanced telecommunications services to rural and other difficult to serve customers. While the Commission may certainly elect to allocate spectrum to support one service but not another, it is difficult to understand in this proceeding why the Commission would decide to reclaim spectrum from an existing, operational service that already serves the ever-growing demands of a variety of customers or to deny TT&C users the opportunity to make use of this spectrum where no appropriate alternative spectrum is available, in order to promote a service that remains undefined in part because this spectrum may not be appropriate to support it. Based on the record established in this proceeding, it is clear that the 3650-3700 MHz band is only one of several bands available for the provision of fixed wireless services. Furthermore, potential Fixed

Service operators themselves have stated that this frequency band does not suit their needs, and it is not yet clear that this spectrum will support a viable service even if paired with the 4.9 GHz band spectrum.[14] To wrest critical spectrum from a viable service to promote a Fixed Service technology that potential Fixed Service providers themselves admit may not succeed in this band is a questionable approach to spectrum allocation, and to overall spectrum management.

The impact of the Commission's decisions in this proceeding is clear. Extended C-band spectrum will no longer be available to FSS providers, who could use the 3650-3700 MHz band to provide critical international Internet backbone, video, and high-speed data services for service expansion or for critical TT&C functions. Instead, the spectrum will go to terrestrial operations, despite evidence that the spectrum block may not support the provision of the Commission's envisioned Fixed Service application. Eliminating the service enjoyed by existing FSS customers and increasingly in demand by new customers while threatening the reliability of advanced system satellite operators who lack critical TT&C spectrum, in favor of a service that may well not work in the spectrum band allocated to it, significantly undermines the public interest.

The arbitrary nature of these critical decisions, which will have a significant detrimental impact on the development of FSS operations in multiple bands and thus should be based on technical data rather than pure speculation, justifies reconsideration of the *First Report and Order*. The Commission should revisit the limitations it has imposed on FSS licensing in this band and consider the possible options it has to accommodate both FSS and Fixed Service users as presented in the record and described herein.

---

[14] *See* discussion *infra* at I-A.

A. THE RECORD DEMONSTRATES THAT CURRENT AND FUTURE DEMAND FOR SATELLITE SERVICES IN THE EXTENDED C-BAND IS STRONG AND THAT THERE IS LITTLE SUPPORT FOR THE PROPOSED FIXED SERVICE IN THIS BAND.

In multiple comments filed in this proceeding, members of the Coalition expressed unanimous concern that the Commission stood poised to adopt a new allocation scheme that would preclude future co-primary FSS use of the 3650-3700 MHz band – effectively eliminating this long-established FSS allocation for most satellite applications.[15] These comments emphasized that substantial investments in this band had already been made by satellite operators in reliance upon the existing allocation,[16] that there are legitimate prospects for sharing among various Fixed Service and FSS users of these bands,[17] and that TT&C use would require only a relatively limited number of earth station facilities.[18] The preponderance of the FSS comments indicated that the Commission had prematurely and arbitrarily concluded that it should foreclose future co-primary FSS use of the 3650-3700 MHz band through the establishment of rules that overwhelmingly favored an as-of-yet unidentified wireless application to the detriment of critical established and future satellite applications.

In particular, both New Skies and Comsat noted that satellites already in orbit, as well as those well down the road to construction and launch, incorporate transponder capacity in the 3650-3700 MHz band. New Skies stated that the *NPRM* proposal would render useless

---

[15] *See* Comsat Corporation ("Comsat") Comments; EchoStar Communications Corporation Comments; GE American Communications, Inc. Comments; Globecast North America Incorporated Comments; Hughes Communications, Inc. Comments; Loral Space & Communications, Ltd. ("Loral") Comments; New Skies Satellites N.V. Comments; PanAmSat Corporation Comments; Satellite Industry Association ("SIA") Comments; Sprint Corporation Comments.

[16] *See* Comsat Comments at 6, 7-8; New Skies Comments at 1-5.

[17] *See, e.g.,* Comsat Comments at 12-15; Loral Comments at 7-8.

[18] *See* Joint Comments of TRW and Lockheed Martin at 7.

significant capacity on these satellites, devaluing its substantial sunk investment and disrupting service to existing and future customers.[19]

At the time that the *NPRM* was issued, the Commission itself had acknowledged a significant shortage of C-band capacity to meet user needs for cost-effective, flexible and reliable satellite services, and had authorized new service premised on this shortage.[20] FSS operators have begun to rely on the extended C-band to satisfy the demand in the United States for international downlink capacity while utilizing the standard C-band for customers who need domestic satellite services. This flexibility enables FSS operators to make efficient use of limited available spectrum.

Moreover, an additional need has emerged to employ extended C-band frequencies for TT&C links to support critical next-generation Ka-band and V-band systems for the provision of broadband service, especially to rural areas.[21] With the growth of satellite services into new and higher spectrum bands, satellite operators desperately need spectrum for TT&C links to maintain existing and future satellite systems, and the extended C-band is critical for the provision of those services. Without the use of the extended C-band, advanced satellite system operators (*i.e.*, those operating in the Ka-band and higher frequency bands) under the Commission's current rules must provide TT&C at the edges of their service spectrum. This is

---

[19] *See* New Skies Comments at 1; *see also* New Skies Request for Emergency Relief at 2-4 (filed March 26, 1999).

[20] *See Columbia Communications Corp.*, 11 FCC Rcd 8639 (¶ 6) (1996) (grant of temporary authority will help to "relieve the present shortage of U.S. domestic and trans-Atlantic C-band capacity"); *Amendment to the Commission's Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems*, 11 FCC Rcd 2429, ¶ 17 (1995) ("We cannot ignore the continuing shortage of domestic C-band capacity").

technically unsound, however, because the propagation characteristics of these higher frequencies do not lend themselves to TT&C functions,[22] and because TT&C equipment that operates in this band has not been developed. Extended C-band TT&C links will increase the reliability and reduce operational costs of satellite service, particularly as TT&C equipment for the extended C-band is readily available on the global market. Without sufficient suitable spectrum to operate these critical links, the ability of these advanced systems to operate would be compromised, and an important option for delivery of high-speed data services, including Internet and distance education applications, would potentially be foreclosed.

While these concerns and considerations were surfacing within the satellite community, the interests of potential Fixed Service providers in the proposed allocation ranged from ambivalence to complete disinterest. Several potential Fixed Service providers filed comments in response to the *NPRM* suggesting that this spectrum was unsuitable for the Commission's terrestrial goals,[23] while others contended that *alternative* spectrum would be

---

[21] Indeed, the Commission specifically noted in 1996 that it had an application on file proposing to utilize these frequencies for TT&C for a direct broadcast satellite. *See Plan for Reallocated Spectrum*, 11 FCC Rcd 17841, 17871 (¶ 54) (1996) ("Band Reallocation Plan").

[22] *See, e.g., Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules*, 12 FCC Rcd 22310, 22319 (1997) ("[O]perations at the Ka-band frequencies are also very susceptible to rain fade and other atmospheric attenuations.").

[23] *See* Cheyenne River Sioux Telephone Authority Comments at 4-5 ("Although the allocation of 50 MHz of spectrum may provide sufficient bandwidth to provide advanced services to some areas in limited situations, it likely is not adequate bandwidth to address the long-term and advanced services needs of people residing on Indian reservations and in rural areas."); SR Telecom, Inc. Comments at 6-7; Lucent Technologies Comments at 3-4 (use of FDD in 50 MHz block will render [Fixed Service] carriers unable to provide necessary high speed data services); Motorola Comments at 1 ("In Motorola's view, however, the 3650-3700 MHz band will be strained to achieve this lofty objective [of providing competitive alternative to wireline local loop]."); GTE Reply Comments at 3 ("GTE is aware of no [Fixed Service] radio equipment available today that works in rural areas and uses a contiguous spectrum block.")

more useful and appropriate than the band suggested in the *NPRM*.[24] In fact, one terrestrial operator directly opposed the allocation of the 3650-3700 MHz band, stating that allocation of such a small spectrum block "would discourage rather than encourage the near term introduction of wireless technologies to meet the current and future data bandwidth challenges."[25] In light of these comments from potential Fixed Service providers, the Commission's initial judgment that the strong interest for the provision of Fixed Service in the extended C-band would lead to the rapid introduction of a service that could compete directly with the local loop and justify the sacrifice of viable satellite operations appeared unwarranted and unjustified.

Nonetheless, the Commission, in its *First Report and* Order, failed to take into account any of the information elicited by the *NPRM*; instead, the Commission has proceeded as if the incorrect assumptions underlying the *NPRM* had been buttressed by the commenters, rather than being controverted. Even under the broad rulemaking discretion granted to federal agencies,[26] an agency's factual findings must be based on a consideration of all relevant factors and supported by substantial evidence,[27] making a "rational connection between the facts found and the choice made."[28] By failing to address any of the concerns and problems raised by both FSS operators and customers and potential Fixed Service providers, the Commission's reasoning falls short of this established standard.

---

[24] *See* Lucent Technologies Comments at 5; SBC Communications, Inc. Comments at 2. Both of these parties suggest that it might be more appropriate for the Commission to look to the 3400 - 3600 MHz band for Fixed Service use.

[25] Airspan Communications Corporation Comments at 1.

[26] *See* 5 U.S.C. §706(2)(A).

[27] *See Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416 (1971); *Cellular Phone Taskforce v. FCC*, 205 F.3d 82 (2d Cir. 2000).

B. PREVIOUS COMMISSION DECISIONS SUPPORT RETAINING FSS ACCESS TO THE EXTENDED C-BAND.

The Commission has specifically supported the continued availability of the extended C-band for satellite use in the past. In its March 1996 *Plan for Reallocated Spectrum*, for example, the Commission identified the 3650-3700 MHz band as a candidate band for increased use by non-Government FSS systems.[29] Indeed, the Commission's 1996 plan encouraged some satellite operators to include the 3650-3700 MHz band in their satellite design and, at a minimum, given operators who already intended to utilize this spectrum the impression that such use would be consistent with the Commission's long-term spectrum allocation decisions.[30] Nowhere in the *First Report and Order* does the Commission describe any changes in circumstance or spectrum demand that would justify the complete abandonment of its 1996 approach. The use of the extended C-band, though limited to the provision of international, intercontinental services, has helped alleviate the capacity constraints in the standard C-band. The Commission's decision to eliminate for all practical purposes the future of satellite operations in this band, less than five years after issuing statements suggesting it would support satellite operations in the very same spectrum, without justification, is arbitrary.

In addition, the limitations placed on the extended C-band by the Commission in this proceeding have undercut international actions that the U.S. has taken to secure access to this very spectrum for TT&C use in conjunction with the various Ka-band and V-band systems.

---

[28] *Motor Vehicle Mfrs. Ass'n v. State Farm Auto. Ins. Co.*, 463 US 29, 43 (1983) (internal quotation marks omitted).

[29] *See Plan for Reallocated Spectrum*, 11 FCC Rcd 17841, 17871 (¶ 54) (1996) ("*Band Reallocation Plan*").

The Commission long ago filed advance publication and coordination materials with the International Telecommunication Union ("ITU") that state the intent of the United States to use the extended C-band spectrum in the range 3650-3700 MHz to satisfy TT&C requirements for both geostationary and non-geostationary satellites in the Ka-band and V-band. This band was, in fact, the only portion of the extended C-band downlink advance published by the United States for commercial Ka- and V-band systems. The designation of appropriate spectrum for TT&C operations is critical to facilitate deployment of broadband satellite systems that will operate in the Ka-band and higher frequencies – systems that hold the promise of fulfilling critical Commission and congressional goals, pursuant, for example, to Section 706, with respect to the broad availability of advanced telecommunications services to United States consumers nationwide.[31]

C. THE COMMISSION FAILED TO CONSIDER THE SIGNIFICANT POTENTIAL FOR SHARED TERRESTRIAL/FSS USE OF THE EXTENDED C-BAND.

In the *First Report and Order*, the Commission simply assumed that FSS/Fixed Service sharing was impossible in the extended C-band, without the benefit of any technical analysis and despite strong evidence to the contrary presented by both FSS and Fixed Service commenters.[32] It seems certain, therefore, that many FSS applications could continue to operate

---

[30] For example, the NSS-803 (launched September 1997) and NSS-806 (launched February 1998) satellites operate in the United States to provide international services using the 3650-3700 MHz band. These satellites have perhaps a decade of remaining useful life.

[31] *See* 47 U.S.C. § 157 nt; *see, e.g., Extending Wireless Telecommunications Services To Tribal Lands*, 15 FCC Rcd 11794, 11812 (¶ 50) (2000) ("Satellites are an excellent technology for delivering both basic and advanced telecommunications services to unserved, rural, insular or economically isolated areas.").

[32] *See, e.g.,* Comsat Comments at 12-15; Nortel Comments at 6; Comsearch Comments at 2.

on a co-primary basis in this band even if future terrestrial services be introduced in the band, depending on the specific technical characteristics of each application.

Members of the satellite industry itself were not in a position to evaluate specific sharing scenarios in this band, in part because of the lukewarm response by Fixed Service interests to the Commission's allocation proposal. At the time of the *NPRM*, there were insufficient technical characteristics available for any specific terrestrial service to facilitate such an evaluation. Even now, the technical parameters for potential terrestrial services that may be provided in the 3650-3700 MHz band remain undefined, and thus the potential for sharing has not yet been studied. Even so, Fixed Service commenters observed that terrestrial wireless use is not inherently incompatible with FSS use, and it would be appropriate to explore sharing opportunities between these services, as well as alternative allocation schemes.[33]

It seems certain, however, that particular FSS uses would be entirely compatible with terrestrial operations. For example, the nature of TT&C downlinks requires only a small number of earth station facilities using at any given time a very limited amount of spectrum at any given site. TT&C stations are large dishes, typically nine meters or more, receiving narrowband transmissions from satellites that are located overhead. Considering the limited potential from terrestrial stations for interference to large dishes that are communicating on a narrowband basis, and the limited number of stations that are needed for TT&C purposes, the

---

[33] For example, Northern Telecom, Inc. ("Nortel") noted that "[s]tudies are well-advanced in ITU-R WP 4-9S to determine the criteria for sharing in these frequencies between the fixed service, including Fixed Service applications, and the fixed satellite service." Nortel Comments at 6. Comsearch, an independent engineering firm that coordinates spectrum use among Fixed Service and FSS licensees at C-band, also observed that the Commission was incorrect to imply that FSS Earth station facilities require large exclusion zones in which no Fixed Service facility can co-exist. *See* Comsearch Comments at 2.

Coalition urges the Commission to permit additional ten mile zones within which TT&C stations could be located to support Ka-band and V-band systems.

Additionally, "gateway" type FSS uses might still be possible to enable the reception of wideband data carriers for the delivery of Internet services. Commenters observed that it is possible for the Commission to derive limits or coordination approaches for the 3650-3700 MHz band that would apply to terrestrial and/or satellite users and enable certain types of wireless and satellite applications to co-exist on a co-primary basis through band segmentation or geographic separation.[34]

At a minimum, the Commission should have undertaken a careful examination of the prospects for co-frequency use by FSS and Fixed Service facilities as part of this proceeding. Instead, it dismissed the possibility of spectrum sharing in a conclusory manner, stating that "allowing FSS *on an unrestrained co-primary basis* would impede any potential widespread use of the band for terrestrial services."[35] This statement begs the question of what steps short of "unrestrained co-primary" access for FSS operations might reasonably be established and that would be less draconian than simply relegating satellite use to secondary status. Furthermore, both the *MO&O* and the *First Report and Order* authorize for a limited time the construction of new earth station facilities within a ten mile radius of existing earth stations; although the Commission failed to provide or consider any technical or other justification for limiting co-primary status to those earth stations within ten miles of an existing grandfathered earth station, this action does support some sharing in this band. The Commission's apparent conclusion that there are only two possible alternatives – eliminating all co-primary access or allowing

---

[34] *See* TRW and Lockheed Martin Joint Comments at 7.

unrestrained access by FSS – is incorrect and unsupported. Before the Commission takes the extraordinary step of eliminating all FSS operations in the extended C-band, technical issues should be addressed in order to determine whether sharing of spectrum is feasible.

D. THE COMMISSION MAY HAVE IMPERMISSIBLY BASED ITS ALLOCATION DECISIONS ON ITS EXPECTATIONS OF FUTURE AUCTION REVENUES IN A MANNER THAT IS CONTRARY TO THE PROVISIONS OF THE COMMUNICATIONS ACT.

The Commission noted in its *First Report and Order* that a recently adopted change in the law precludes the Commission from assigning spectrum for international or global satellite services by competitive bidding.[36] While not directly linking this provision with its actions in this proceeding, the Commission noted in the same paragraph the severe limitations it is placing on new satellite use of the band, and elsewhere in the *First Report and Order* proposed that Fixed Service authorizations will be assigned in this band exclusively through auctions.[37] This action on one hand sharply limiting FSS spectrum use, and on the other declining to consider potential means of greater FSS/Fixed Service sharing – despite comments from both industries suggesting that such sharing is possible and should be explored – suggests a potential bias against spectrum use for satellite operations because of an inability to auction spectrum for such services and obtain auction revenues for the Federal Treasury. This bias, however, is contrary to the Communications Act. In particular, the statutory provisions that authorize the Commission to employ auctions as a means of spectrum assignment specifically provide that the

---

[35] *See First Report and Order* at ¶ 18 (emphasis added).

[36] *See First Report and Order* at ¶ 21.

[37] *See id.* ¶¶ 21, 120.

Commission may not premise spectrum allocation decisions on the expectation that certain uses may generate Federal revenues.[38]

II. THE COMMISSION'S DEADLINE FOR FILING OF APPLICATIONS ON A CO-PRIMARY BASIS IS ARBITRARY AND UNSUPPORTED BY THE RECORD.

There is no rationale for distinguishing between applications filed before, on or after November 30, 2000. Therefore, relegating earth stations that are located within the ten-mile radius for which applications are filed after November 30, 2000 to secondary status is arbitrary. As discussed above, the Commission's concerns about "allowing FSS on an unrestrained co-primary basis"[39] impeding widespread use of the band for Fixed Services are not substantiated in the record.

The November 30 deadline is particularly problematic with respect to potential use of the extended C-band for TT&C for systems operating at the Ka-band and above. The *Second NPRM* seeks comment on issues relating to out-of-band TT&C operations, and tentatively concludes that the 3650-3700 MHz band should be made available for TT&C "upon a showing of particularized need."[40] Yet the November 30 deadline has come and gone, and issues relating to TT&C operations in this band are unresolved. As a result, satellite system operators and licensees were put in the position of facing a deadline for filing TT&C applications that would be eligible for grandfathering as co-primary without knowing what requirements may be applicable to TT&C operations in this band.

As discussed above, the Coalition strongly supports permitting TT&C operations in the 3650-3700 MHz band for systems with communications links in the Ka-band and above.

---

[38] *See* 47 U.S.C. § 309(j)(7)(A).

[39] *Id.* ¶ 18.

However, any future rule changes will be of little or no effect unless systems have a continued ability to apply for new use of the 3650-3700 MHz band for TT&C. Mission-critical TT&C operations cannot be conducted on a secondary basis. Similarly, the very reliability of satellite communications services will be jeopardized if earth stations are required to accept interference from potential terrestrial operators. Secondary is, in fact, "no-dary" for satellite services. Thus, unless the Commission reconsiders the November 30 cut-off, not only will continued FSS operations in general be stymied but future TT&C installations in the extended C-band will be impossible, and the need for reliable TT&C spectrum for Ka-band systems and above that was recognized in the *Second NPRM* will go unaddressed.[41]

Furthermore, because TT&C operations use large antennas and narrow bandwidths, they are particularly suited for sharing with terrestrial services, as noted above. As a result, extending or eliminating the deadline for new TT&C earth stations will not meaningfully affect the coordination zone within which the terrestrial Fixed Service and FSS licensees would use to coordinate. New TT&C earth stations located within ten miles of a grandfathered earth station would of necessity be encompassed by the coordination zone for the grandfathered earth station, which the Commission has proposed to set at 200 kilometers (approximately 125 miles).[42]

Prior to making its decision, which significantly hampers the ability of FSS providers to expand their existing service or undertake critical TT&C operations, the Commission should have performed a thorough technical study to determine at what point, if

---

[40] *Second NPRM* at ¶ 130.

[41] *See Second NPRM* at ¶ 131.

[42] *See id.* at ¶ 103.

any, FSS service might impede terrestrial fixed services and examined more carefully the possibility of sharing or coordination by FSS and Fixed Service operations.[43] In addition, the Commission should have considered, at a minimum, compromise alternatives somewhere between the decision to eliminate all future co-primary FSS access to the band and unrestrained co-primary access by FSS. Therefore, the Commission should reconsider its decision.

III. COMMENTS ON THE SECOND NOTICE OF PROPOSED RULEMAKING.

In addition to the arguments set forth above in support of the Commission's reconsideration of its decision to eliminate FSS services from the extended C-band, the Coalition offers the following comments in response to the issues raised by the Commission in its *Second Notice of Proposed Rulemaking.*

A. THE COMMISSION SHOULD DELETE US 245.

The Commission adopted footnote US 245 to the Table of Frequency Allocations in 1984.[44] At the time, service providers had to use the Intelsat system for international FSS services transmitted to or from the United States, and the footnote, which limits use of the 3600-3700 MHz band to "international inter-continental systems," was "aimed narrowly at meeting future Intelsat projected requirements."[45]

In the intervening years, however, the Commission has authorized separate systems that also may be used to provide international FSS services, and more recently, Intelsat has committed to privatization by July 18, 2001. In light of the advent of competition in the international satellite service market, the Commission has requested comment as to whether

---

[43] *See* discussion *infra* at I-C.

[44] *See First Report and Order* ¶ 128 n. 315.

[45] *Id.* ¶ 128.

footnote US 245 should be deleted, thereby opening up this frequency band to the full range of international competitors.[46] The Coalition believes that to ask the question is to answer it, and urges the Commission to delete the footnote.

B. USE OF EARTH STATION SIZE LIMITS IN THE ADJACENT BAND.

In the *NPRM*, the Commission had proposed a restriction on the use of earth station antennas smaller than 3.5 meters in the 3700-3720 MHz portion of the C-band. Based on the record in this proceeding, however, the Commission tentatively concluded that "there is no need to restrict the usage of VSATs or the size of the antennas used with VSATs in the 3700-3720 MHz band."[47] The Coalition supports this tentative conclusion.

The Commission initially had assumed that antennas smaller than 3.5 meters would be overly susceptible to fixed service out-of-band emissions.[48] As demonstrated in the parties' comments, however, it is not the case that earth stations larger than 3.5 meters can avoid out-of-band emissions any better than earth stations smaller than that when the out-of-band emissions are emanating from ubiquitous terminals in an adjacent band. The Commission, therefore, tentatively has concluded that "there is no need to restrict the usage of VSATs or the size of the antennas used with VSATs in the 3700-3720 MHz band."[49]

Requiring that earth stations in 3700-3720 MHz be 3.5 meters or larger, moreover, would have devastating consequences for the C-band VSAT industry. It effectively would establish a minimum dish size for the entire 3700-4200 MHz band, because in practice

---

[46] *See id.*

[47] *Second NPRM* at ¶ 113.

[48] *See NPRM* at ¶ 11 n.30.

[49] *Second NPRM* at ¶ 113.

earth stations are designed to receive services for an entire band. In the *NPRM*, the Commission had assumed that "C-band earth stations generally now employ antennas which are 3.5 meters or greater in diameter."[50] In fact, however, as the record reflects, VSAT systems are commonplace in the C-band, and for that reason so are antennas having a diameter of less than 3.5 meters. Any limitation or prohibition on the use of earth station antennas smaller than 3.5 meters would render these systems obsolete, and would preclude new VSAT applications in the C-band.

Thus, and for the reasons set forth in the *Second Notice of Proposed Rulemaking*, the Commission should not limit earth station size in the upper adjacent band.

C. OUT-OF-BAND TT&C OPERATIONS IN THE 3650-3700 MHZ BAND FOR FSS SYSTEMS.

In the *Second Notice of Proposed Rulemaking*, comment was requested concerning "whether Part 25 of the Commission's rules should be modified to permit TT&C operations in the extended C-bands (3650-3700 MHz and 5850-5925 MHz) for FSS systems that operate outside of the C-band frequencies."[51] The Commission recognized that there are factors that may "render TT&C operations impracticable in the allocation in which the space station is operating."[52] It proposed "to permit authorization of TT&C operations in the 3650-3700 MHz band for FSS systems that operate outside of the 3650-3700 MHz band, upon a particularized showing of need."[53]

The Coalition supports the Commission's proposal. In particular, the Coalition supports permitting FSS licensees to use the 3650-3700 MHz to conduct TT&C for FSS systems

---

[50] *NPRM* at ¶ 11 n.30.

[51] *Id.* ¶ 130.

[52] *Id.*

[53] *Id.*

operating in the Ka-band and higher frequency bands. The frequencies that these systems use for service links lack the reliability that is needed for mission critical functions such as TT&C.[54] On a moment's notice, and for extended periods, rain or other precipitation can block transmissions in Ka-band and V-band, eliminating communication between space station and earth station. TT&C operations necessitate greater availability than is possible in these circumstances; TT&C ground stations must be in constant contact with the space stations they are controlling.

In the *Second Notice of Proposed Rulemaking*, the Commission inquires whether systems featuring earth station diversity could achieve the reliability needed to use Ka-band or higher frequencies for TT&C purposes.[55] Unfortunately, that is not a realistic option. Satellite systems already employ earth station diversity for TT&C operations in the more reliable C-band and Ku-band, to afford back-up capability in the event that a primary TT&C station is down because of planned or unplanned outages (*e.g.*, scheduled maintenance or equipment failure). If the systems were to use a similar scheme for TT&C stations operating in Ka-band or V-band, however, they would run the risk that their primary or secondary TT&C station would be unavailable because of weather conditions when their other TT&C station was experiencing an outage. That is an unacceptable risk. Short of deploying several additional back-up stations, which given the price tag of TT&C systems would be cost-prohibitive, earth station diversity cannot be used to achieve the reliability that is required.

---

[54] Although some TT&C missions, such as recovery operations, have a particularly pronounced need for reliability, *see id.* ¶ 131, it is imperative for all TT&C communications that there be a reliable link between space and ground.

[55] *See id.* ¶ 131.

There is no reason to require a "particularized showing of need"[56] to justify using the extended C-band to support TT&C in the 3650-5700 MHz band for Ka-band and V-band FSS systems. The factors warranting use of 3650-3700 MHz for Ka-band and V-band TT&C links - the need for reliable TT&C links, and the lack of reliability in higher frequencies that are susceptible to rain fade - are factors that apply generally to FSS systems operating in Ka-band and V-band. Rather than requiring individual licensees to make identical showings as they apply for TT&C links, and consuming precious Commission resources processing multiple waiver requests, the Commission simply should adopt a rule permitting use of the 3650-3700 MHz band for Ka-band and V-band TT&C operations. In anticipation of such operations, the Commission already has filed advance publication and coordination materials with the International Telecommunication Union ("ITU") calling for use in the United States of extended C-band spectrum at 3650-3700 MHz to meet TT&C requirements of geostationary and non-geostationary FSS satellites in the Ka- band and V-band.

Adopting new rules for the use of the extended C-band for TT&C systems is not enough. The Commission must also ensure that operators have a reasonable opportunity to use these frequencies. Accordingly, the Coalition urges the Commission to reconsider its proposal to make TT&C operations primary only if conducted at grandfathered FSS sites, and otherwise to classify such stations as secondary. As discussed above: (1) mission critical TT&C operations cannot be conducted on a secondary basis; (2) new TT&C stations located within ten miles of a grandfathered earth station will not meaningfully affect the coordination zone or the exclusion zone that terrestrial licensees would face. Indeed, considering the limited potential from

---

[56] *Id.* ¶ 130.

terrestrial stations for interference to large dishes that are communicating on a narrowband basis, and the limited number of stations that are needed for TT&C purposes, the Coalition urges the Commission to permit additional ten mile zones within which TT&C stations could be located to support Ka-band and V-band systems.

CONCLUSION

Based on the foregoing, the Commission should reconsider its *First Report and Order* to the extent discussed herein because its decisions are not supported by the record and do not serve the public interest. Additionally, the Commission should take action consistent with the Coalition's comments in the *Section Notice of Proposed Rulemaking.*

Respectfully submitted,

EXTENDED C-BAND AD HOC COALITION

Christine E. Enemark
Jonathan D. Blake
Covington & Burling
1201 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2401
(202) 662-6110

December 18, 2000

Its Attorneys